ring 40 illustrating the spherical retainer 44 is formed below the horizontal bottom surfaces of radial members 42. The centered sphere is urged into spherical formed hole 63, making the bottom surfaces of radial members contiguous with recess surface 62. The upper surfaces of the radial members are formed below the upper supporting surface of the O-ring 40. This is shown by dimension 43.

Another embodiment of a recess 62 includes a vent hole 67 for exhausting trapped air between the bottom of an object and the supporting surface of the O-ring 40. Hole 67 can also be used to draw a vacuum to urge an object against the O-ring supporting surface.

In summary, a self clutching O-ring having at least two radial struts connectively extending from inside surfaces to a central sphere-shaped retainer. The top surfaces of the radial struts are formed below the top surfaces of the O-ring. The central sphere-shaped retainer is connectively formed to the radial struts and extending below the bottom surfaces of the struts. A circular recess is provided for containing and supporting the O-ring, its inside surface is dovetailed. The circular recess has a spherical hole disposed on its center for urging the insertion of the sphere-shaped retainer.

While the invention has been particularly shown and described with reference to the preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A self clutching O-ring for supporting substrates comprising:

an O-ring structure having at least two internally disposed struts, each strut connectively extending to a centrally disposed sphere retainer, the struts having an upper and a lower surface;

the upper surface of the struts are formed below the O-ring surface.

a sphere-shaped retaining insert is connectively formed below the bottom surface of the struts.

2. The self-clutching O-ring of claim 1 and further comprising:

a circular recess for supporting and containing the O-ring;

the circular recess having a spherical hole disposed on its center for removeably inserting the sphere-shaped retainer of the O-ring.

3. The self-clutching O-ring of claim 1 wherein the O-ring is molded using an elastomeric polymer material that is compatible with a substrate to be supported.

4. The self-clutching O-ring of claim 1 wherein the O-ring is used for supporting substrates during high speed handling and processing of the substrates.

5. The self-clutching O-ring of claim 1 wherein the O-ring retains a supporting substrate by its frictional properties.

6. The self clutching O-ring of claim 1 wherein the circular recess having a dovetailed edge combined with the sphere-shaped hole prevents an O-ring from lifting with the substrate caused by stiction properties of elastomeric materials.

7. The self-clutching O-ring of claim 1 reduces processor downtime caused by particulate contamination and substrate breakage resulting from missing O-rings.

8. The self-clutching O-ring of claim 1 wherein utilization of the self clutching O-ring is a highly reliable and more serviceable equipment solution.

9. A self retaining O-ring pad for supporting semiconductor wafers comprising:

an O-ring pad arrangement having at least two internally disposed struts, each strut connectively extending to a centrally disposed sphere retainer, the struts having an upper and a lower surface;

the upper surface of the struts are formed below the O-ring surface.

a sphere-shaped retaining insert is connectively formed below the bottom surface of the struts.

10. The self retaining O-ring pad of claim 1 and further comprising:

a circular recess for supporting and containing the O-ring;

the circular recess having a spherical hole disposed on its center for removeably inserting the sphere-shaped retainer of the O-ring.

the circular recess has a vent hole radially disposed halfway between the spherical hole and the inside surface of the circular recess.

11. The self-retaining O-ring pad of claim 9 wherein the O-ring pad is molded using an elastomeric polymer material that is compatible with a supported wafer.

12. The self-retaining O-ring pad of claim 9 wherein the O-ring pad is used for supporting semiconductor wafers during high speed handling and processing of the wafers.

13. The self-retaining O-ring pad of claim 9 wherein the O-ring pads retain a supporting wafer by its frictional properties.

14. The self retaining O-ring pad of claim 9 wherein the sphere-shaped retainer in combination with the struts prevents an O-ring pad from lifting upwards with the wafer, the lifting is caused by stiction properties of an elastomeric material.

15. The self-retaining O-ring pad of claim 9 reduces processor downtime caused by particulate contamination and substrate breakage resulting from a

missing O-ring pad.

16. The self-retaining O-ring pad of claim 9 wherein utilization of the self clutching O-ring pad is a highly reliable and more serviceable equipment solution.

17. A method for retaining O-ring pads for supporting semiconductor wafers, comprising the steps of:

providing a robot with a wafer-handling paddle;

providing a paddle with a plurality of circular recesses, each circular recess contains and supports an O-ring pad, the circular recesses having a dovetailed periphery and a spherical hole disposed on its center, and a vent hole radially disposed halfway between the spherical hole and the inside surface of the circular recess.

providing an O-ring pad having at least two internally disposed struts connectively extended to a centrally disposed sphere-shaped retainer, the struts having an upper and a lower surface;

the top surfaces of the struts are formed below top surfaces of the O-ring pad.

the sphere-shaped retainer is connectively formed below the bottom surfaces of the struts;

placing the O-ring pad on each of the circular recesses while conforming it to the dovetailed periphery and removeably urging the sphere-shaped retainer into the spherical hole;

18. The method of claim 17 wherein the O-ring pads are molded using an elastomeric polymer material that is compatible with a supported wafer.

19. The method of claim 17 wherein the O-ring pad is used for supporting semiconductor wafers during high speed handling and processing of the wafers.

20. The method of claim 17 wherein the O-ring pad retains a supporting wafer by its frictional properties.

21. The method of claim 17 wherein the sphere-shaped retainer in combination with the struts prevents an O-ring pad from lifting upwards with the wafer, the lifting is caused by stiction properties of an elastomeric material.

22. The method of claim 21 wherein a conventional O-ring stuck to the bottom of a wafer may be carried into a high temperature process chamber thus contaminating the process environment.

23. The method of claim 17 wherein the self clutching O-ring pad reduces processor downtime caused by contamination and substrate breakage resulting from a missing O-ring support.

24. The method of claim 17 wherein utilization of the self-clutching O-ring pad is a highly reliable and more serviceable equipment solution.